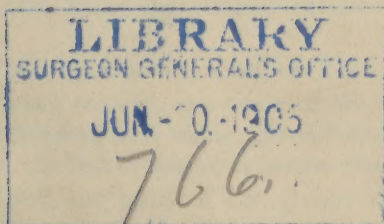


SOLUBLE COMPRESSED TABLETS

NOTES ON LOCAL ANESTHESIA BY INFILTRATION.

AS SUGGESTED BY DR. C. L. SCHLEICH.



JOHN WYETH & BROTHER,

Manufacturing Chemists,

PHILADELPHIA.

1895.

TABLE 12
C. L. B. L. E. 22727

LOCAL ANESTHESIA

INJECTION

AS PREPARED BY DR. C. L. B. L. E.

LIBRARY
JUN - 6 - 1903

JOHN W. H. H. H. H.

JOHN W. H. H. H. H.



SOLUBLE COMPRESSED TABLETS

FOR

LOCAL ANESTHESIA

BY

INFILTRATION.

AS DEVISED BY DR. C. L. SCHLEICH.

The very marked results of the clinical and hospital experiments of Dr. C. L. Schleich, have fully demonstrated the great value of his method of producing LOCAL ANESTHESIA BY INFILTRATION. Through the courtesy of Prof. Parvin, we have had access to Dr. Schleich's work, from which we have culled the most important facts bearing on his experience. Following his suggestions, we have prepared from these formulæ a series of Soluble Compressed Tablets embracing all the various strengths designated by this distinguished surgeon, as detailed in the following paper. The combination of Cocaine, Morphia and Chloride of Sodium will at once serve to convince medical men of its value and the results of its further extended use in the hands of other practitioners leaves no doubt of the practical utility of this method of entirely destroying sensation, in not only minor operations, but can be depended upon in many cases of greater importance where Ether and Chloroform are contra-indicated.

The advantages of our Soluble Compressed Tablets are manifold. They are at once soluble, are made of the several desired strengths, are permanent and stable, the solutions can be prepared in a moment, the fear of septic infection from stale solutions is entirely removed, the operator can always be supplied with more than sufficient for any emergency, and the combined ingredients do not deteriorate or change by age or climatic influences. We feel there is a wide field for the use of this

method, not only in the hands of the surgeon, but with the general practitioner, for the relief of local pain, and to the dentist they will prove an invaluable aid.

We are prepared to furnish the following sizes of these Soluble Compressed Tablets :

TABLETS TO MAKE 100 MINIMS OF SOLUTION.

No. 1.—STRONG.

Cocaine Hydrochlor.	1-5 grain
Morph. Hydrochlor.	1-40 grain
Sodium Chloride, C. P.	1-5 grain

One tablet dissolved in 100 minims of water yields the **STRONG SOLUTION**, representing :

1-500 part of Cocaine Hydrochlor.
1-4000 part of Morph. Hydrochlor.
1-500 part of Sodium Chloride

or each 1000 minims contain

2 grains Cocaine Hydrochlor.
1-4 grain Morph. Hydrochlor.
2 grains Sodium Chloride

No. 2.—NORMAL.

Cocaine Hydrochlor.	1-10 grain
Morph. Hydrochlor.	1-40 grain
Sodium Chloride, C. P.	1-5 grain

One tablet dissolved in 100 minims of water yields the **NORMAL SOLUTION**, representing :

1-1000 part of Cocaine Hydrochlor.
1-4000 part of Morph. Hydrochlor.
1-500 part of Sodium Chloride

or, in other words, each 1000 minims of this Solution equal :

1 grain Cocaine Hydrochlor.
1-4 grain Morph. Hydrochlor.
2 grains Sodium Chloride

No. 3.—WEAK.

Cocaine Hydrochlor.	1-100 grain
Morph. Hydrochlor.	1-40 grain
Sodium Chloride, C. P.	1-5 grain

One tablet dissolved in 100 minims of water yields the **WEAK SOLUTION**, representing :

1-10,000 part of Cocaine Hydrochlor.
1-4000 part of Morph. Hydrochlor.
1-500 part of Sodium Chloride

or each 1000 minims of Solution contain

1-10 grain Cocaine Hydrochlor.
1-4 grain Morph. Hydrochlor.
2 grains Sodium Chloride

Should more than 100 minims be required, use one tablet for every 100 minims of water used.

TABLETS TO MAKE 500 MINIMS OF SOLUTION.

No. 4.—STRONG.

Cocaine Hydrochlor.	1 grain
Morph. Hydrochlor.	1-8 grain
Sodium Chloride, C. P.	1 grain

One tablet dissolved in 500 minims of water yields the STRONG SOLUTION.

No. 5.—NORMAL.

Cocaine Hydrochlor.	1-2 grain
Morph. Hydrochlor.	1-8 grain
Sodium Chloride, C.P.	1 grain

One tablet dissolved in 500 minims of water yields the NORMAL SOLUTION.

No. 6.—WEAK.

Cocaine Hydrochlor.	1-20 grain
Morph. Hydrochlor.	1-8 grain
Sodium Chloride, C. P.	1 grain

One tablet dissolved in 500 minims of water yields the WEAK SOLUTION.

Should more than 500 minims of solution be required, use one tablet to every 500 minims of water.

In cases where the Solution is desired to be stronger or weaker than the Normal Solution, but being of the same relative proportions of Cocaine, Morphine and Sodium Chloride as in the Normal Solution, all that is necessary, is to either increase or decrease the quantity of water to be used to each tablet of the Normal Recipes No. 2 and No. 5.

Special attention is called to the fact that in the Normal (No. 2), Strong (No. 1) and Weak (No. 3) tablet, only the Cocaine Hydrochlorate varies, while the Morphine Hydrochloride and the Sodium Chloride are the same amounts in all three recipes. This also applies to Nos. 4, 5 and 6.

The Tablets are put up in tubes of 20 tablets each, in cases holding 10 tubes, and also in larger packages such as 100's, 500's and 1000's.

John Wyeth & Brother,

Manufacturing Chemists,

PHILADELPHIA.

EXTRACT FROM TREATISE ON LOCAL ANESTHESIA BY INFILTRATION.

BY DR. C. L. SCHLEICH, OF BERLIN.

The entire publication being too lengthy, we have for this circular only translated the most pertinent and important points bearing upon the subject, that we hope will be found of interest to the practitioner, and be fully explanatory in the manner of using our COMPRESSED TABLETS FOR MAKING INSTANTANEOUS ANESTHETIC SOLUTIONS FOR INFILTRATION. The principles of this method are further explained in the article which we herewith reprint from the *Medical News*, November 16, 1895, by Dr. WELLER VAN HOOK, of Chicago.

Dr. SCHLEICH has found by long and extensive experiments in his private clinic and hospitals of Berlin, that the strengths of the solutions required are the most suitable as he here below formulates them, and which he has adopted finally for his practice exclusively. In his article under the heading of "Solutions and Appliances for Infiltration-Anesthesia," he gives the following:

Three different solutions are necessary at times during the progress of operations.—No. 1, *Strong*. No. 2, *Normal*. No. 3, *Weak*. Their composition is as follows:

"NO. 1 STRONG."

Cocaine Muriate	0.2 (3 grains.)
Morphia Muriate	0.025 (2-5 grain.)
Soda Chloride	0.2 (3 grains.)
Distilled water sterilized q. s. to 100 c. c. (3 2-5 fluid ounces.)	

"NO. 2 NORMAL."

Cocaine Muriate	0.1 (1 1-2 grains.)
Morphia Muriate	0.025 (2-5 grain.)
Soda Chloride	0.2 (3 grains.)
Distilled water sterilized q. s. to 100 c. c. (3 2-5 fluid ounces.)	

"NO. 3 WEAK."

Cocaine Muriate	0.01 (1-6 grain.)
Morphia Muriate	0.025 (2-5 grain.)
Soda Chloride	0.2 (3 grains.)
Distilled water sterilized q. s. to 100 c. c. (3 2-5 fluid ounces.)	

To each 100 c. c. (3 2-5 fluid ounces) of these solutions two drops of a five-per cent. solution of carbolic acid may be added, if they are intended for stock solutions, to preserve them in a more perfect antiseptic state. This addition, however, is not absolutely necessary, if the solutions are used at once.

Of the No. 1 solution as much as 25 c. c. (6 1-2 fluid drachms) may be injected during one operation; of the No. 2 as much as 100 c. c. (3 2-5 fluid ounces); and of No. 3 even as much as 500 c. c. (16 fluid ounces) or one-half liter. It may, however, be noted that No. 1 and No. 3 are only to be used in exceptional cases, while No. 2 is really the normal or typical solution for anesthetic infiltration, which in almost every operation will be found sufficient to the very end. Of the No. 1 solution we make use

in cases where No. 2 has proven inadequate and in cases of excessive susceptibility, as, for instance, when the tissues are in a state of acute inflammation. The weak solution (No. 3) is sometimes used in cases where the maximum dose has already been injected by the other solutions used, and where further anesthesia is desired in the under tissues, or the muscles or in deeper parts.

The syringes used for injecting the anesthetic solutions are of three capacities, the average size holding about 2.5 c. c. (40 minims), the medium 5 c. c. (80 minims) and the large 10 c. c. (160 minims). They should be supplied with a cross-piece to enable the practitioner to give even pressure while injecting the fluid, especially when resistance is felt in the sclerotic tissues. The syringes, also, should be fitted with different lengths of needles, some of them being curved. It is very essential to keep these syringes in perfect condition, and they should be kept thoroughly aseptic whether in use or not.

TECHNICAL POINTS ON AN INDIVIDUAL OPERATION WITH ANESTHESIA BY INFILTRATION.

After thoroughly cleansing, soaping and shaving the part to be operated upon, we begin by preparing the first point of insertion of the hypodermic needle so as to make it painless. The cuticle at this point can be prepared either by an ether spray or aethylchloride, but for mucous membrane, or exposed parts, in place of these sprays a touching of the part with a small crystal of cocaine, or with a ten-per cent. solution of carbolic acid is necessary.

Great care must be taken in all cases, in the application of ether or aethylchlorides to exposed parts, as the sensibility is so great that it precludes this means of procedure. A free application of glycerine over all surrounding parts, is also highly recommended.

When the point of insertion has been rendered painless, we now insert the needle, continuing at the same time with the spray until the needle is sufficiently introduced to cover its apex and has taken hold. Now a slight pressure is given to the piston; at the point of the needle you will notice a round, white wheal which contains the anesthetic solution. The pressure on the piston is continued until that wheal is about the size of a penny, to which size it must be brought very gradually with even pressure. Now withdraw the needle and re-insert it within the radius of the first produced wheal, and repeat the operation until we have a new wheal formed exactly as in the first case.

In this way we continue to make injections and forming wheals until all the surrounding zone on which we intend to operate is covered.

The chain of wheals is the approximatively marked line of incision. The least deviation outside of this line of infiltration will cause pain. The incision can be made at once through the anesthetized cuticle, or a further deeper anesthesia may be produced by a new line of infiltration.

I estimate about one (40 minims) syringe to each three or four centimeters of sub-cutaneous tissue, injecting it at once into the sub-cutaneous cell system. Now the whole field of operation has raised itself like a high oedema or like a boil high above the skin. Wherever it is the intention

to operate upon, the space must be in this immersed condition, full of solution and saturated at all points of the intended incision.

It must be particularly remarked that the infiltration on one spot lasts from fifteen to twenty minutes, and should it be found necessary to return to such a spot at the expiration of this time, a fresh infiltration would be necessary. In this way we may operate for hours on the same spot.

It must also be remembered that after the period above mentioned, the skin parts which have been held back during the operation must be anesthetized over again, and care should be taken to make the wheals large enough to allow space for the thread and knots; one method being to produce one on each side of the separated cuticle and draw the needle and thread through the centre of these.

INFLAMED PARTS.

There is a great difference of sensibility in the anesthetizing of a normal part or of a highly sensitive one, such as inflamed parts by tumors, etc. In these cases it is absolutely necessary to start the anesthesia in the healthy parts. Begin the infiltration far back from the seat of inflammation and insert the needle through the first formed wheal gradually, while pressing steadily on the piston, deep into the part toward the seat, emptying the syringe all outside of the inflamed zone.

In this way the infiltration is carried on from the four opposite points at first, and then only gradually the upper cuticle is treated, and this also beginning first in the healthy region.

In this way wheal after wheal is formed till the whole of the inflamed part is saturated, which can be readily observed by the disappearance of the red inflamed color and its substitution by the white zone of the infiltration.

The above described principles, taken from Dr. Schleich's publication, seem to be the general rule, but, of course, have to be suitably altered to accomplish the desired complete anesthesia, according to the field of operation, or the seat of pain.

Dr. Schleich lays particular stress upon thorough antiseptic procedure and most minute details to cleanliness during this process; and also cautions repeatedly that all and every part upon which the knife or needle is used, must be thoroughly saturated with the anesthetic solution to be absolutely painless, and that the least slip outside of this territory will produce the usual pain.

THE VALUE OF INFILTRATION-ANESTHESIA

BY WELLER VAN HOOK, A.B., M.D., OF CHICAGO.

THE use of cocaine in local anesthesia was at first followed by the most satisfactory results in operations upon the mucous membranes, the resorptive powers of which facilitated the application of the drug directly to the nerve-endings. In imitation of this natural method of reaching the sensory nerves, hypodermic injections of the same solution were readily thought of, and at once it became a practice, which is still popular, to

inject strong solutions of cocaine (from 2 to 10 per ct.) into the subcutaneous lymphatic spaces. The best results by this method are obtained when as in the finger of penis, the return-circulation can be interrupted by circular constriction, and the entire dose be retained as a depot of anesthetizing material. Corning has used hard rings pressed upon flat skin-areas, in order to similarly interrupt the circulation of the fluids that tend to carry away the anesthetizing substance. Under this practice there are three zones of sensory nerve-activity—a zone of complete anesthesia corresponding to the area in which the cocaine is in sufficient concentration to completely overcome the sensibility of the nerve-endings and filaments, a zone in which sensation is partially inhibited, and an area in which the anesthesia gradually fades away.

It was easily seen that if by osmosis or by the mechanic movement of fluids the cocaine were brought into contact with all the nerve-structures in approximately one degree of concentration, and if this concentration were exactly that required to inhibit nerve-action, the desired result would be accomplished with a minimum quantity of the drug.

Lieberich has shown, however, that the injection of simple water into the tissues in such a way as to produce an artificial edema would induce with some discomfort a transitory anesthesia. C. L. Schleich found that by combining a small quantity of cocaine with a weak salt-solution the discomfort was removed and the anesthesia prolonged; and it only remained to add a little morphine to the solution to prolong the beneficent action sufficiently to give opportunity for the performance of surgical operations. Anesthesia depends, in this method, upon the artificial ischemia established; upon the high pressure to which the tissues are subjected; upon the lowered temperature brought about by the introduction of the cool water; and finally upon the direct action of the anesthetizing drugs. Leaving aside alleged personal disinclination on the part of European clinicians to adopt the method of Dr. Schleich, it seems to me that the failure of the infiltration-method up to the present time to become popular depends upon the fact that a special technic is required. This technic is, however, so simple and easy that American physicians, I am sure, need only read an account of it to understand and practise it. And, as local anesthesia can be induced by it in a few moments for the opening of abscesses, furuncles, or carbuncles, for the removal of a prepuce, or for the amputation of fingers, or even of the forearm, with the use of a solution of *one part of cocaine in a thousand of water*, every intelligent worker must grant its advantages and apply it in practice.

The materials required for the procedure consist of a weak solution of cocaine, morphine, and common salt, in sterilized water at the temperature of living-rooms, and a good ordinary hypodermic syringe. The formula for the solution is:

℞.—Cocaine hydrochlorate 0.1 (gr. iss).
 Morphine hydrochlorate 0.02 (gr. i-3).
 Sodium chloride 0.2 (gr. iij).—M.

Fiat pulv.

Sig.—To be dissolved in 1000 grams (℥ iij—℥ iij) sterilized water.

One will find it convenient to carry with him in his minor operating

case a number of such powders, one of which can easily be dissolved in water, so that the solution is always fresh. Should the solution be kept some days before being used, two drops of five per cent. phenol should be added to it.

Two other solutions are recommended—a stronger one containing double the quantity of cocaine and a weaker solution containing only one-tenth the quantity of cocaine. The very strong solution is useful for inflammatory lesions, the weak solution for prolonged and extensive operations; but for most cases the medium solution is best adapted.

It cannot too strongly be insisted that the value of these simple materials lies almost wholly in their application. The hypodermic syringe is to be used to fill the tissues to distention with the anesthetizing fluid. The needle is first introduced into the skin at the desired point, the syringe being held almost parallel with the skin. The first essential point for the beginner to learn is that the point of the syringe must not be pushed through the skin, as in administering an ordinary hypodermic injection of morphine, but must stop within the skin, so that the fluid when pressed out by the piston will distend the skin itself, raising a white, bloodless wheal somewhat like a mosquito-bite.

The author of the method, wishing absolutely to free his process from all pain, freezes the skin at the sight of the first puncture. This is easily done with ethyl chlorid, or with a spray of ether from an ordinary hand-atomizer. But the pain caused by introducing a hypodermic point is so small that I have never used the spray, especially as the application of cold is itself very unpleasant.

The area thus infiltrated is instantly anesthetic, and may be incised, punctured, or cauterized without sensation, so long as neighboring areas not yet rendered edematous are not interfered with. And this leads to the second imperative injunction upon the beginner—be sure the area you wish to operate upon is thoroughly infiltrated. The obvious converse to the proposition that the infiltrated area is anesthetized is that when pain is produced it is due to the operator's carelessness in not infiltrating the tissues incised.

The first small area having been anesthetized, it only remains to infiltrate a sufficient number of new circles adjoining the first to include the field of operation; and, as the first area is devoid of sensibility, the neighboring skin can be made edematous by painlessly inserting the needle near the edge of the wheal and forcing the fluid into the tissues from this insensitive point of vantage. Having repeated this process often enough to anesthetize the skin-area, the subcutaneous tissue is squirted full of fluid by passing the needle through the anesthetized skin. The fasciæ, muscles, and periosteum must be carefully anesthetized in the same way, and the operation may then be begun. It is needless to say that these proceedings are always to be carried out aseptically, the syringe and the water used being sterilized before being used. The anesthesia lasts about twenty minutes. If the operation is not finished in time the infiltration can be repeated.

Several simple but important points must be borne in mind in order to insure success under special circumstances. Of these, probably the most

important is that inflamed tissues are hypersensitive and must not themselves be infiltrated until the neighboring normal tissues have been anesthetized. For example, to inject fluid into the apex of a furuncle without preparation would be a cruelly painful procedure; but if the operator carefully anesthetizes the skin all around the boil before infiltrating the inflamed structures, he will be able to open the suppurating focus absolutely without pain. Schleich is in the habit of advancing upon such abscesses from two foci upon opposite sides of the seat of infection.

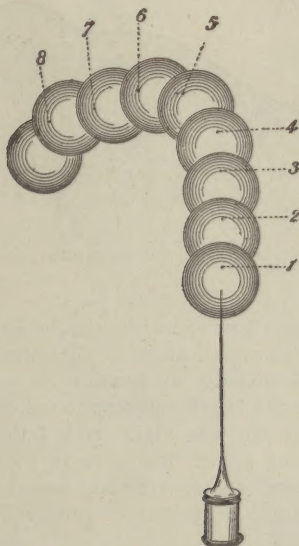


DIAGRAM I. (After SCHLEICH.) Showing how the successive wheals are raised, the point of the syringe being inserted at the points marked by the dots.

I have found it necessary to use the finest and sharpest needle-points in working on such delicate tissues as the skin and mucous membrane of the prepuce, since, if the needle is pushed a trifle too far, the fluid lodges not in the skin, but under it, leaving the cutis sensitive. By observing this precaution I was able to avoid a general anesthetic in removing an inflamed tight foreskin from a man 72 years of age.

When large nerve-trunks have to be severed, a drop or two of five-per cent. phenol is recommended to be injected as nearly as possible into the sheath of the nerve.

In amputating digits the infiltration should be begun from two points at opposite sides of the member, the infiltration being continued all along the line of proposed incision, and the deeper tissues, including the periostium, being infiltrated with great care.

Recently I had occasion to extract a large, loose body from a man's knee-joint. After infiltrating the skin and subcutaneous areolar tissue, the capsule of the joint was similarly infiltrated, and with no pain whatever

the joint-body—about $1\frac{1}{2}$ in. long—was removed. The wound was sutured and the patient made a good recovery.¹

At my request Dr. A. F. Lemke, interne in the Cook County Hospital, has used this method in minor cases. His reports are quite satisfactory, numerous abscesses having been opened and a number of infected inguinal glands have been removed.

The most serious case in which I have practised the method was that of an operation (upon Dr. L.) for varicocele. Without my knowledge the



DIAGRAM II. The syringe-point stops at the papillary layer and the fluid lodges in the skin itself.

doctor had taken so large a dose of whisky that he was in a state of hilarity, which interfered with the application of the anesthetic. Nevertheless, the veins were ligated through an incision an inch long; and, as the scrotum was very long and lax, it was amputated. The extensive wound was sutured. The pain felt was slight, and, I think, would have been almost none at all if the patient had been in such a mental state as to give warning when imperfectly anesthetized areas were encroached upon.

Schleich has performed a number of celiotomies under infiltration-

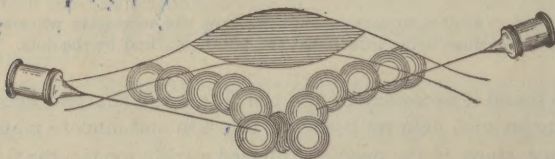


DIAGRAM III. (SCHLEICH.) Showing mode of injecting the fluid under an abscess.

anesthesia, removing ovaries and tubes, etc. He will find few imitators in any but the most uncomplicated cases. But every one will see the advantage of dispensing with general anesthesia when abscesses originating in the appendix vermiformis are adherent to the abdominal walls and require simple drainage. Perhaps in no cases is local anesthesia more desirable in preference to general narcosis than in the primary opening and drainage of empyema-cavities, since even ether-anesthesia is dangerous when the thoracic viscera are compressed.—*Medical News*, Nov. 1895.

103 STATE STREET.

¹ This case was reported, with my permission, in the "Annals of Surgery," September, 1895, p. 328, Case II.